

Done!

Done!

Done!

# The Lab Room

Done!

Done!

Done!

## Air Masses

Click to go

**Watch It!**

Put your sticker here!

Click to go

**Read It!**

Put your sticker here!

Click to go

**Explore It!**

Put your sticker here!

Click to go

**Organize It!**

Put your sticker here!

Click to go

**Illustrate It!**

Put your sticker here!

Click to go

**Assess It!**

Put your sticker here!

## Your Answers:

1. A front is

2. An air mass is

3. A cold front is formed when

Is your work saved?

Go Back to Lab

# Watch It!

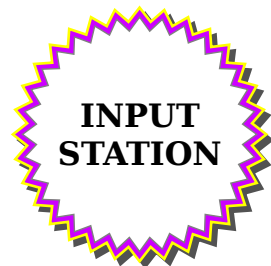
Go to this link and watch the video:

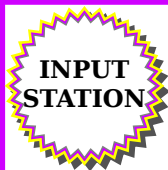
<http://studyjams.scholastic.com/studyjams/jams/science/weather-and-climate/air-masses-and-fronts.htm>

**The URL is case-sensitive.**

Then answer these questions:

1. Describe what a front is.
2. Describe what an air mass is.
3. Explain how a cold front is formed.





# Read It!

## Air Masses - Part 1

Read Part 1. Jot down notes and drawings that will help you remember the meanings of these words. You can use the sketch/scribble button on the toolbar.



front

*Type/draw here.*

cold fronts

*Type/draw here.*

fropa

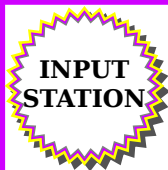
*Type/draw here.*

Brrr! Feel that sudden chill in the air? Changes in weather are caused by the movement of weather fronts. A **front** is the area between two air masses that vary in temperature, humidity, and density. The leading edge of the air mass is the front.

**Cold fronts** occur when cold air pushes away warm, moist air and replaces it with cooler, drier air. It works kind of like a hand plane. A hand plane has a sharpened metal plate that forces shavings of wood upward as it is pushed forward over a wooden surface. With a cold front, warm air is quickly forced upward as the cold air mass arrives.

Cold fronts travel at 20-25 miles per hour, usually heading east, and they travel faster in the winter than in the summer. As cold fronts move in, high cumulus clouds form. Thunderstorms and showers are usually present, and cooler, drier air soon follows. Wind ahead of a cold front blows from the south/southwest and shifts after a **fropa** (frontal passage) into the northwest. A fropa is a frontal passage, which is the passage of a front over a specific point on the surface. Cold fronts are oriented along a line from the northeast to the southwest.

**Continue to Part 2**



## Read It!

### Air Masses - Part 2

Read Part 2. Jot down notes and drawings that will help you remember the meanings of these words. You can use the sketch/scribble button on the toolbar.



warm front

*Type/draw here.*

meteorologist

*Type/draw here.*

When you look at a weather map, you might notice colored lines with symbols on them. A cold front is shown as a blue line and triangles that point in the direction the front is traveling. A **warm front** is drawn with a red line and half circles pointing toward the direction of the cold air being replaced by the warm front.

Now that you know what fronts are and how they move, you're on your way to becoming a **meteorologist** – an expert in weather forecasting!

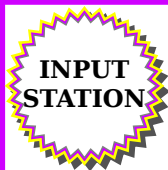
Continue to

## Your Answers:

1. Answer here

2. Answer here

3. Answer here



## Read It! Air Masses - Questions

1. What does the front symbol look like for a cold front?



2. Which best describes a cold front?

- A. Warm air is pushed up by cooler air and thunderstorms or ice storms are present
- B. Cold air is pushed up by cooler air and thunderstorms or ice storms are presents
- C. Warm air is pushed up by cooler air and dry air is present along the front
- D. Cold air is replaced by warm air and thunderstorms are present

3. Which best describes the speed and appearance of most cold fronts?

- A. 5-15 mph East, NW to SE line
- B. 5-15 mph East, NE to SW line
- C. 20-25 mph East, NE to SW line
- D. 20-25 mph East, NW to SE line

Is your work saved?

Go Back to Lab

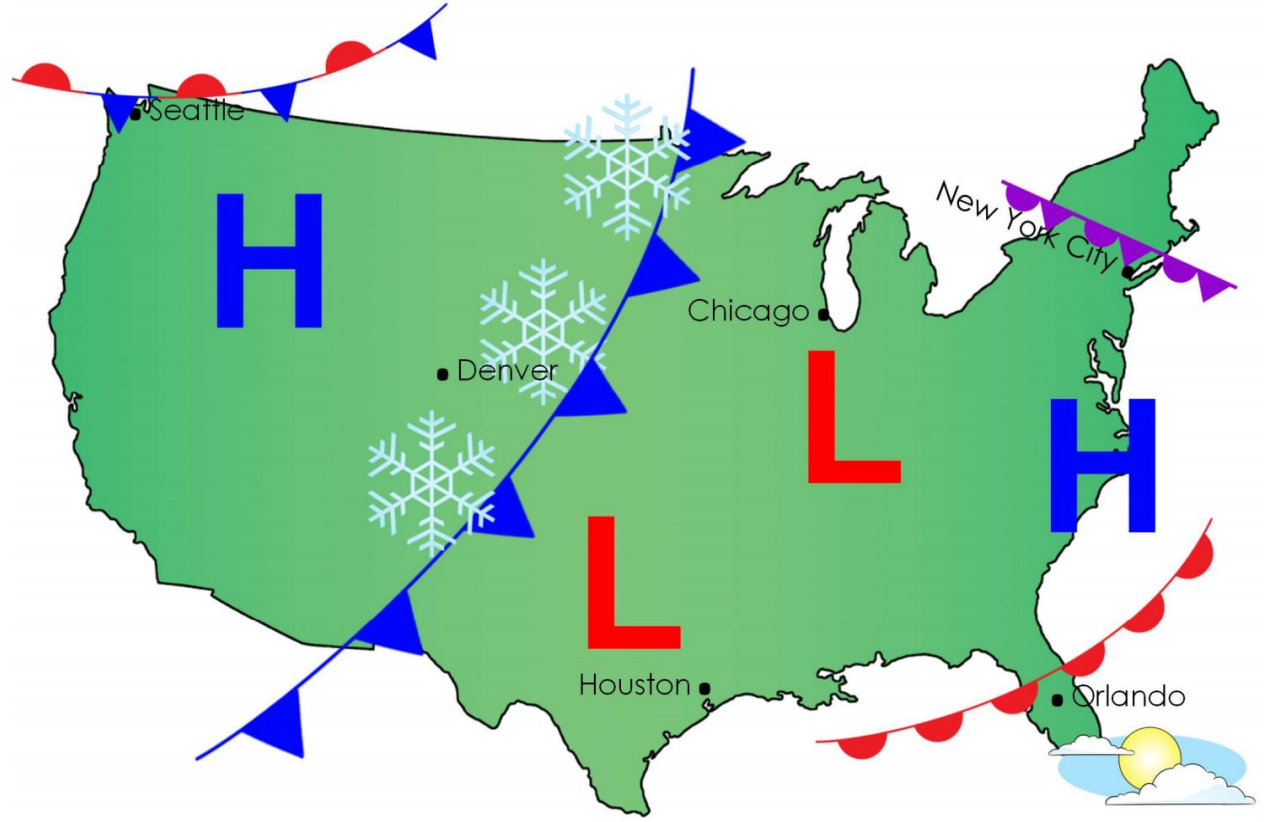
1. On your lab sheet write what you already know about cold and warm fronts.

### Your Answers:

1. What I know about cold fronts is

What I know about warm fronts is

# Explore It! Part 1



Go to Part 2

# Explore It! Part 2

Locate the blue flags on the weather map.

This is called a **cold front** and travels in the direction the flags are pointing. The air behind it is cold, dense, and dry. When it overtakes a warm front it pushes the warm front up and can cause heavy thunderstorms or snowstorms at the front boundary.

Locate the red and blue flags on the same line on the weather map.

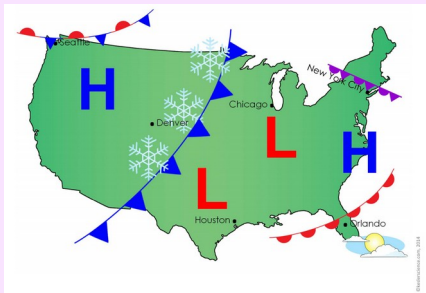
This is called a **stationary front**. Stationary fronts happen when a cold air mass and a warm air mass meet but neither have enough force to move the other. The mixture of cold and warm air causes rain that remains in the area for sometimes many days.

Locate the red flags on the weather map.

This is called a **warm front** and travels in the direction the flags (half circles) are pointing. The air behind it is warm and less dense and warmer than a cold air mass. When it overtakes a cold air mass it slides above the cold air and can cause a light rain shower.

Locate the purple flags on the weather map.

This is called an **occluded front**. This type of front happens when two cold fronts converge on a warm front and push it upwards. You can expect light rain on an occluded front. 1. Summarize an occluded front on your lab sheet.



Use the map on this slide for this activity.

2. Move the labels of the different fronts to the proper location on the map.
3. Summarize what you have learned about the four different fronts.

### Your Answers:

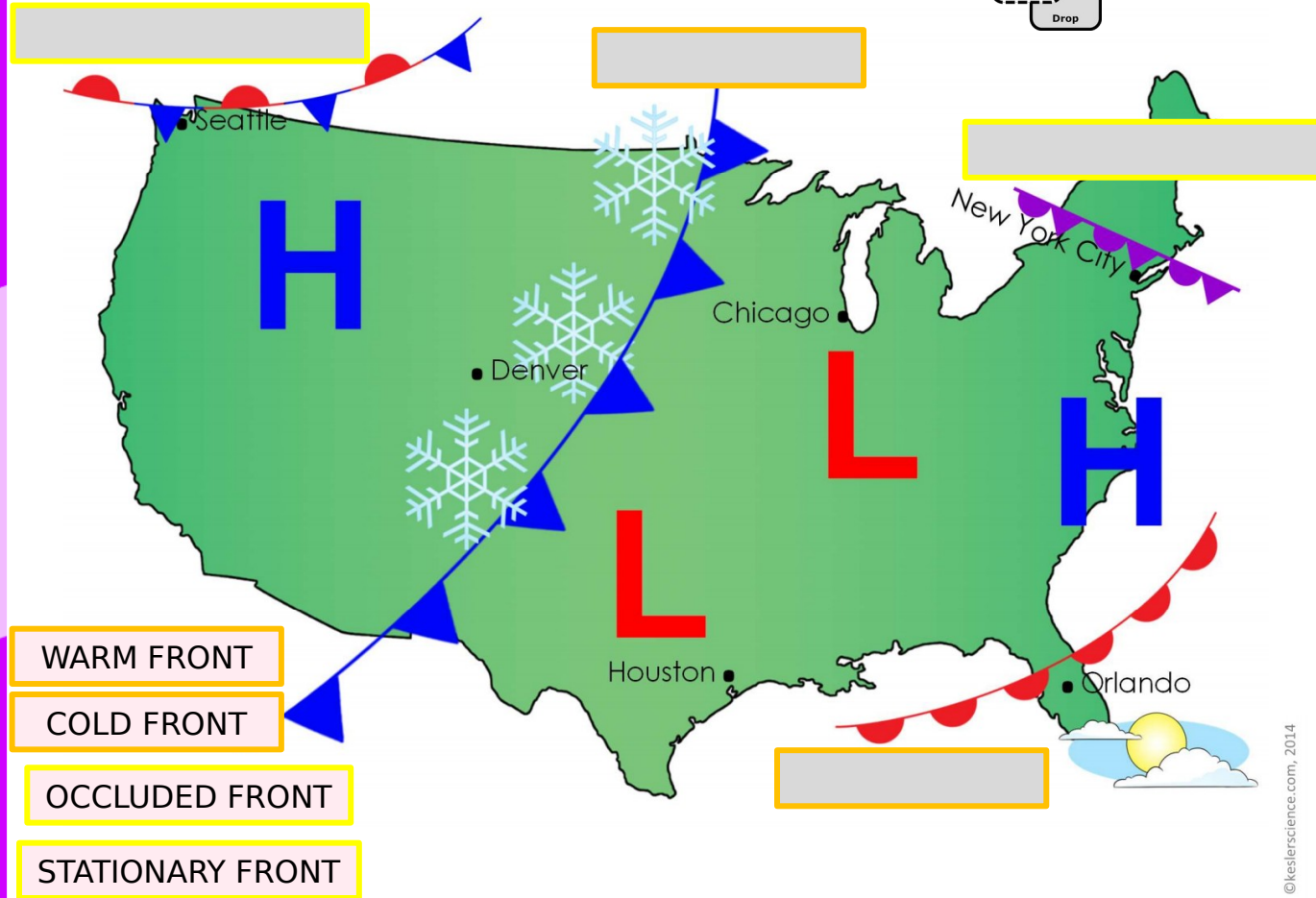
3. I know that a warm front

I know that a cold front

I know that an occluded front

I know that a stationary front

## Explore It! Part 3



[Go to Part 4](#)

## Your Answers:

1. The weather in Seattle is likely

It will stay that way for

2. The weather in Denver is

3. The weather in NYC is

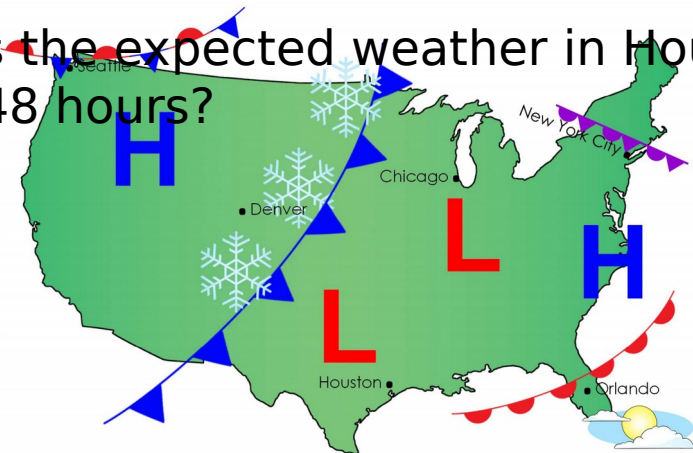
4. In about 48 hours, the expected weather in Houston will be

Is your work saved?  
Go Back to Lab  
Room

## Explore It! Part 4

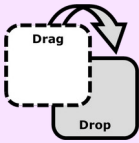
Use the information you learned to answer the following questions. (Look back at previous slide if you need to.)

1. What kind of weather is Seattle likely having?  
How long will it stay that way?
2. What kind of weather is Denver experiencing?
3. What do you expect the weather to be like in NYC?
4. What is the expected weather in Houston in about 48 hours?



INPUT  
STATION

Match the descriptions and the flags to the correct front.



# Organize It!



Two cold air masses converge on a warm air mass.

Often associated with light rain

Light rain that remains in the area for days.

Cold dense air replaces warm, less dense air.

| Type of Front    | Flag Picture | Description | Description                                                                    |
|------------------|--------------|-------------|--------------------------------------------------------------------------------|
| Cold Front       |              |             | Often heavy thunderstorms or ice storms and decreasing temperatures.           |
| Warm Front       |              |             | Warm air mass catches up to a cold air mass and moves over it.                 |
| Stationary Front |              |             | A cold and warm air mass meet but neither has the force to push the other one. |
| Occluded Front   |              |             |                                                                                |

Is your work saved?  
Go Back to Lab



# Illustrate It!

Use the draw function, (or colored pencils & paper) to draw each of the 4 types of fronts:

- **cold front**
- **warm front,**
- **stationary front**
- **occluded front.**

Label the fronts and describe the weather at each front boundary.

See the next page for help on inserting pictures into the page.

**Go to Image Help**



# Illustrate It!

There are several ways to get images into these pages.

- 1. Draw on your own paper.** Take a picture and upload that picture to this device, OR,
- 2. Draw with an app.** Open Google Draw, Paint, or any other graphics app. Draw your image, then either take a screenshot or picture of your image.

For either option, go to the “Insert” menu on the upper left corner and choose “Pictures.”

Select “This Device” and browse to the folder where you saved the picture. Click on the file name and click “Insert.”

Is your work saved?

Go Back to Lab

## Your Answers:

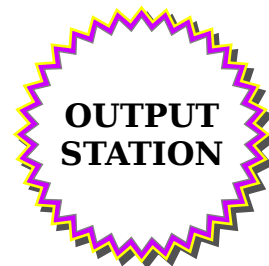
1. Answer here

2. Answer here

3. Answer here

# Assess It! Part 1

1. What kind of front occurs when a cold air mass replaces a warm air mass?
  - A. Cold front
  - B. Warm front
  - C. Stationary front
  - D. Occluded front
2. What kind of weather would you expect in Denver, CO?
  - A. Rainy weather with mild temperatures
  - B. Icy storms with decreasing temperatures
  - C. Icy storms with increasing temperatures
  - D. Rainy weather with warm temperatures
3. Which is the best description for a stationary front?
  - A. Colder weather that will last for a couple of hours
  - B. Warmer weather that will last for a couple of hours
  - C. Consistent rain that may last for several days
  - D. Strong thunderstorms or ice storms



**Go to Part 2**

## Your Answers:

4. Answer here

5. Answer here

6. Answer here

7. Answer here

8. Answer here

### Word Bank

- cold front
- front
- fropa
- meteorologist
- warm front

Is your work saved?

Go Back to Lab

# Assess It! Part 2

*Use the vocabulary words from "Read It" to complete the following sentences.*

When you are a (4)\_\_\_\_, or an expert in weather forecasting, you need to pay attention to a lot of things. For example, a wind ahead of a cold front that shifts from the south/southwest to the northwest happens after a (5)\_\_\_\_. When looking at a weather map if you see a red line with half circles that is indicating a (6)\_\_\_\_. And if you see a blue line with triangles, then it is indicating a (7)\_\_\_\_. In both cases, a (8) \_\_\_\_\_ is the boundary between two air masses that differ in temperature, humidity, and density.

**OUTPUT  
STATION**